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A New Species of *Clerodendrum* (Verbenaceae) from the Izu Islands

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A new species of *Clerodendrum*, *C. izuinsulare*, endemic to the Izu Islands, is described on the bases of the slightly protruded anthers, whitish flower tube and narrower and green calyx lobes.

Introduction

We have been investigating relationships between the flowers of *Clerodendrum trichotomum* and their pollinators (swallowtail butterflies) in the Izu Islands for several years. During the course of study, we recognized two flower types exist among the *Clerodendrum* plants in the Izu Islands. The plants represented by one flowering type apparently corresponds to *C. trichotomum* Thunb. var. *trichotomum*. The plants represented by the other flower type are similar to *C. trichotomum* var. *fargesii* (Dode) Rehder in the glabrous leaves, but, we found them to be different from var. *fargesii* in flower structure and color. Thus, we recognized a new species in the Izu Islands.

Materials and Methods

We collected fresh flowers of *Clerodendrum* from the five islands of the Izu Islands, that is, Toshima, Niijima, Kozu, Miyake and Hachijo Islands. We randomly collected approximately 10 flowers per tree from 5–10 trees of each form on each island and measured floral parts in a fresh condition in the natural habitat. We measured lengths of flower tube (FTL) and protruded filament length (PFL) (Fig. 1). We also measured the same characters on herbarium specimens at the Herbarium of University of Tokyo (TI) after boiling and softening the flowers. We carried out additional field observations at Toshima Island and Hachijo Island of the Izu Islands and at Yakushima Island of the Satsunan Islands in 1996. Several materials were obtained from Oshima Island in the Izu Islands and Amami-oshima Island of the Ryukyu Islands by colleagues in 1996.

Results

Scatter diagrams of flower tube length (FTL) and protruded filament length (PFL) in the Izu Islands are shown in Figure 1. Although flower tube length is not differentiated, there are distinctive two modes in protruded filament length in Toshima and Niijima. We can recognize two types of flowers, type A with exceedingly protruded, and type B with slightly protruded anthers.

Scatter diagram on the data from herbarium specimens of University of Tokyo is shown in Figure 2. The values of PFL of type B in the Izu Islands were shorter than those of the plants in the other regions. Flowers of *C. trichotomum* var. *trichotomum* and var. *fargesii* cannot be distinguished from each other, although the

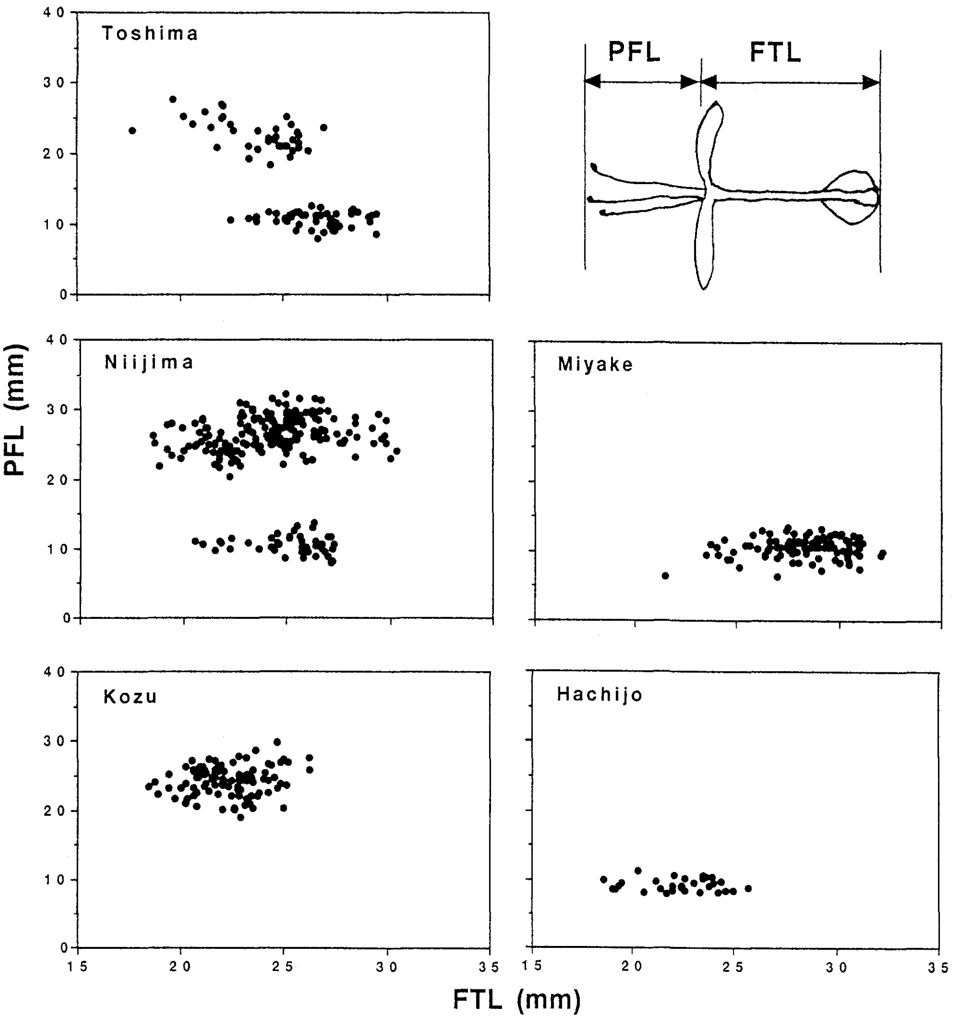

Fig. 1. Scatter diagram of flower tube length (FTL) and protruded filament length (PFL) in the five islands of the Izu Islands.

PFL value of var. *fargesii* seems to be close to type B flowers.

From the field observations, there are other differences between type A and type B. In the flowers of type A, the corolla lobes are patent and slightly anteriorly curving at tips, the corolla tubes are dark purplish pink and the calyces have reddish pigments and their lobes are narrowly ovate to ovate; while in the flowers of type B, the corolla lobes are slightly reflexed, the corolla tube is white or pale pink and the calyces are green or green tinged with faint red pigments and their lobes are lanceolate to narrowly ovate (Fig. 4). The flowers of type B are somewhat smaller than those of type A. Plants with type A flowers have a great deal more red pigments on calyces and leaves than those with type B (Fig. 3). These differences seem to be correlated to the differences observed in protruded filament length and hairiness of leaves.

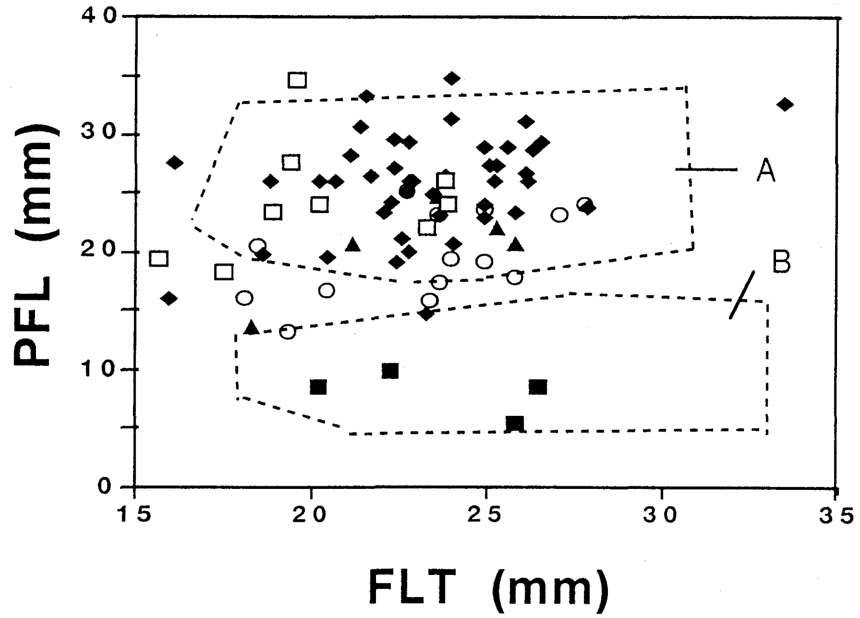

Fig. 2. Scatter diagram of flower tube length (FTL) and protruded anther length (PFL) of *Clerodendrum* from the herbarium specimens of University of Tokyo. ◆, *C. trichotomum* var. *trichotomum* (Honshu, Shikoku, Kyushu); ▲, var. *trichotomum* (Ryukyus); □, var. *trichotomum* (Taiwan, China, Korea); ○, var. *fargesii* (S. Kyushu, Ryukyus, Taiwan); ■, *C. izuinsulare* (the Izu Islands). A and B indicate the ranges of type A and type B in Fig. 1, respectively.

Discussion

We recognized two flower forms, type A and type B, in *Clerodendrum* in the Izu Islands. The plant with Type A corresponds to *C. trichotomum* var. *trichotomum*. The plant with Type B is found to be different from either *C. trichotomum* var. *trichotomum* or var. *fargesii*. Thus, we would like to propose the plant with type B flowers as a new species, *C. izuinsulare* K. Inoue, M. Hasegawa & S. Kobayashi. Diagnostic characters of *C. izuinsulare* and *C. trichotomum* are summarized in Table 1. Distributions of *C. trichotomum* and *C. izuinsulare* and the Izu Islands are shown in Table 2. *C. trichotomum* and *C. izuinsulare* are sympatrically occurring in several islands such as Toshima Island and Niijima Island and intermediate forms were not observed in these islands. Further, there was some differences in flowering season between them; the flowering season of *C. izuinsulare* was one or two weeks later than that of *C. trichotomum* at Niijima Island (M. Hasegawa personal observation).

Clerodendrum izuinsulare in the Izu Islands is apparently akin to *C. trichotomum* var. *fargesii* of S. Japan from the glabrous leaves. However, floral morphology and color of *C. trichotomum* var. *fargesii* corresponds to var. *trichotomum*.

Description

Clerodendrum izuinsulare K. Inoue, M. Hasegawa & S. Kobayashi, sp. nov. (Fig. 5)

Clerodendrum trichotomum Thunb. var.

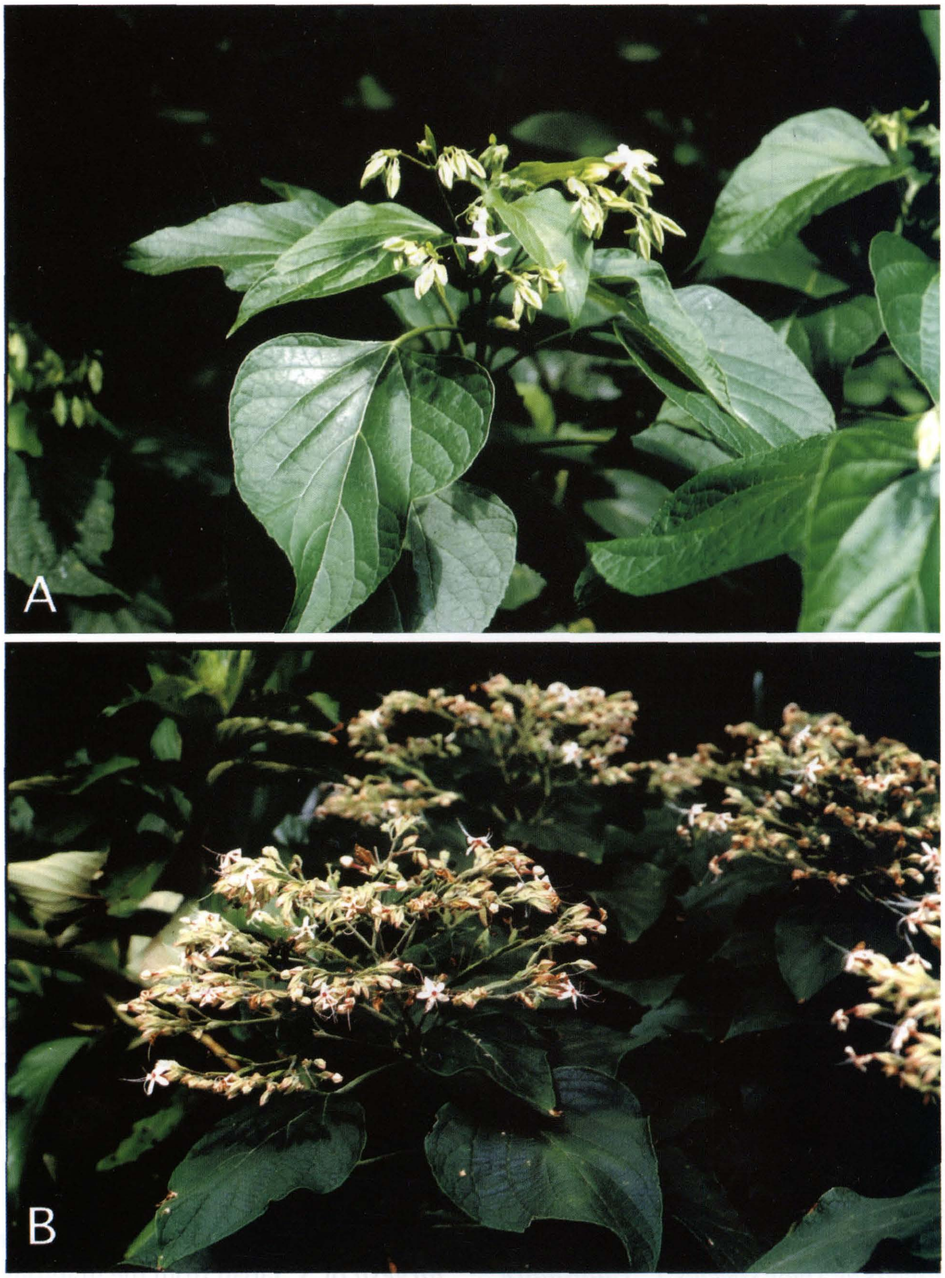

Fig. 3. *Clerodendrum* in the Izu Islands. A. *C. izuinsulare* at Miyake Island; B. *C. trichotomum* at Kozu Island.

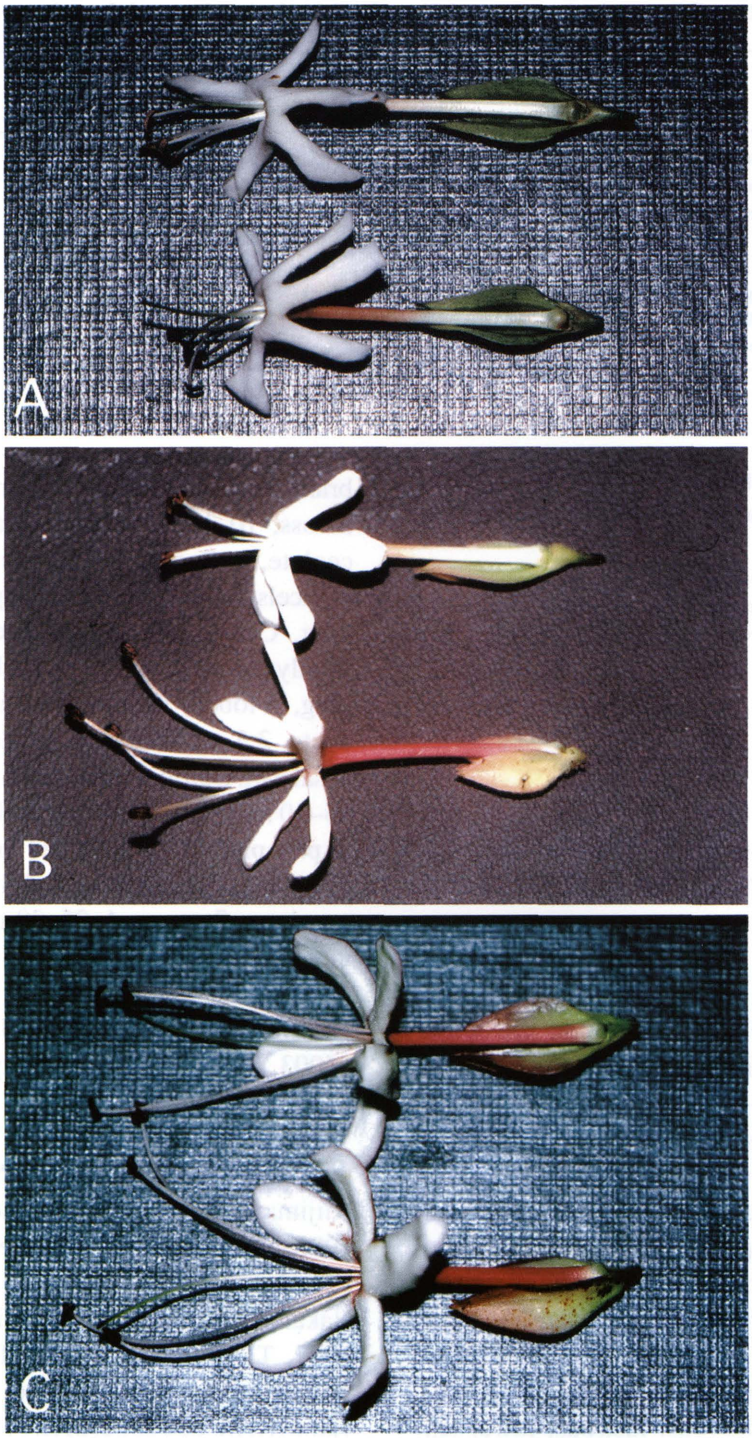

Fig. 4. Flowers of *Clerodendrum* in the Izu Islands. A. *C. izuinsulare* at Miyake Island; B. *C. izuinsulare*; (upper) and *C. trichotomum* (lower) at T-shima Island; C. *C. trichotomum* at Kozu Island.

Table 1. Diagnostic characters of *Clerodendrum izuinsulare* and *C. trichotomum*

	Clerodendrum izuinsulare	*C. trichotomum* (including var. *fargesii*)
Hairiness on the surface of leaf	glabrous	pubescent or glabrous
Protruded filament length from corolla	5–15 mm	15–35 mm
Flower tube color	white to pale pink	dark purple to pink
Sepal lobe	lanceolate to narrowly ovate	narrowly ovate to ovate
Sepal color	green	usually with purplish color
Petal posture	slightly reflexed at apex	patent and slightly curving anteriorly
Petal length	8–10 mm	11–13 mm
Flowering season	Aug.–Oct.	late July–Sep.

Table 2. Distribution of *Clerodendrum izuinsulare* and *C. trichotomum* in the Izu Islands

Island	*Clerodendrum izuinsulare*	*C. trichotomum*
Oshima Isl.	–	+
Toshima Isl.	+	+
Niijima Isl.	+	+
Kozu Isl.	–	+
Miyake Isl.	+	–
Hachijo Isl.	+	–
Aogashima Isl.*	+	–

+, present; –, absent; *, from the herbarium specimens.

fargesii (Dode) Rehder affinis, sed a qua staminibus brevioribus, 25–30 mm longis, ab tubo corollae 5–15 mm excedentibus, tubis corollarum albis vel dilute roseis, calycibus angustioribis, viridulis differt.

Deciduous tree up to 6 m tall. Branchlets terete, sparsely pubescent at nodes, lenticels oblong. Leaves opposite, papiraceous; petiole 2–12 cm long; blade widely ovate, 8–20 cm long, 5–15 cm wide, apex acuminate, base truncate to roundish, minutely denticulate, upper surface glabrous, lustrous, lower surface sparsely pubescent along veins, veins and veinlets raised on lower surface, tri-nerved near base. Flower August to October. Inflorescences terminal and in upper axils, dichasially branched, corymbose, 7–20 cm long, 8–20 cm across, 10–100 flowered. Bracts linear-lanceolate, 1–2 cm long. Peduncle glabrous; pedicels pubescent in upper part, 2–10 mm long. Calyx greenish or green tinged with faintly red, narrowly campanulate, 12–17 mm long, 5-lobed, lobes lanceolate to narrowly ovate, 2.5–4.5 mm long, acute, pubescent at basal part. Corolla white, salverform, glabrous, 15–20 mm across, 5-lobed; collora tube white or pale pink, slender, 20–27 mm long, ca. 1.5 mm wide; lobes oblong, lightly reflexed, 6–9 mm long. Stamens 4, 25–30 mm long, 5–15 mm excerted from the corolla tube.

Type: On the foot of Mt. Higashi-yama, Hachijo Island, Tokyo Pref., Japan (K. Inoue 96003, SHIN 179987 – holotype; isotype in CBM, KYO, and TI).

Hab.: JAPAN, Tokyo Pref., Toshima Isl., in the village (K. Inoue 96005, SHIN 183482). Niijima Isl., Wakago (M. Hasegawa, 13 Oct. 1996, SHIN 183541). Miyake Isl., Igaya (Y. Fukuda, 27 Aug. 1979, TI). Hachijo Isl., Nakanogo (M. Kato & E. Miki 13, 29 Oct. 1977, TI), Mitsune – Mt. Mihara-yama (J. Murata 8317, TI), on the foot of Mt. Kando-yama (K. Inoue 96002, SHIN 183484), Yazaki (K. Inoue 96004, SHIN 183483). Aogashima Isl., Saigo – Sanpo (M. Mizushima, 17 Nov. 1954, TI).

Nom. Jap. Shima-kusagi.

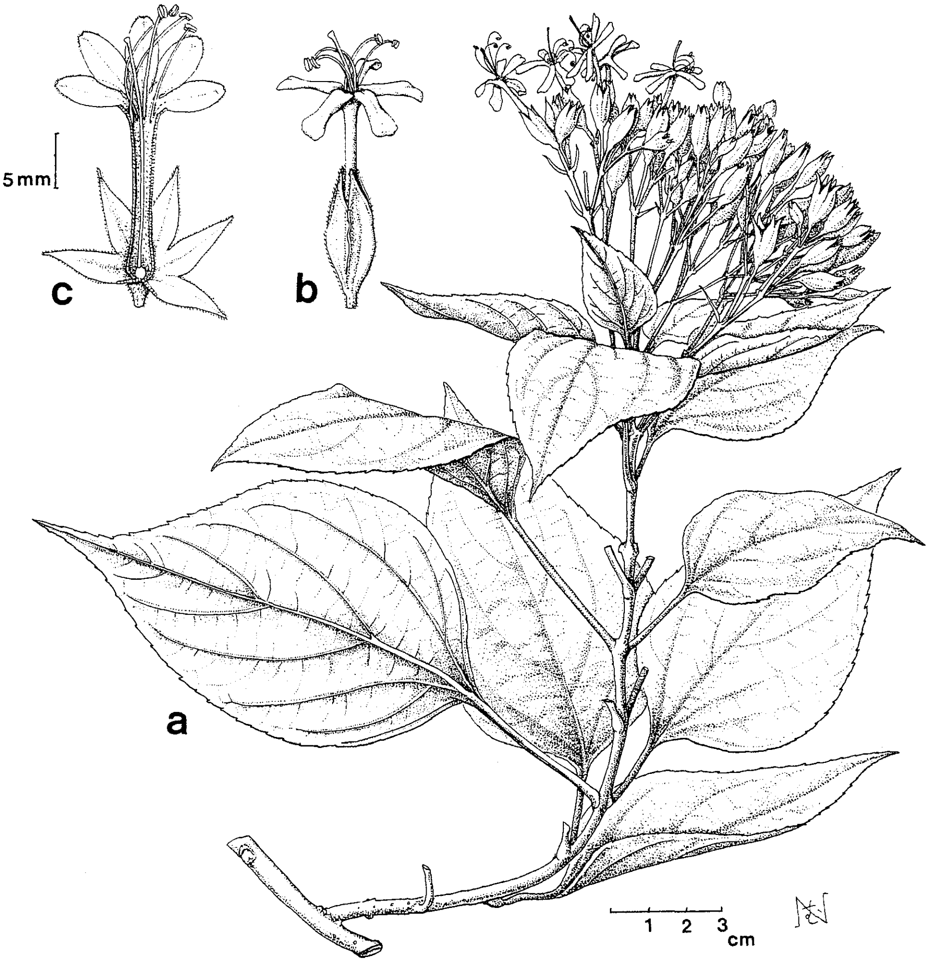

Fig. 5. *Clerodendrum izuinsulare* K. Inoue, M. Hasegawa & S. Kobayashi. a, plant (holotype); b, flower and calyx; c, corolla, stamen and sepals.

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井上 健[a]，長谷川雅美[b]，小林史郎[c]：伊豆諸島のクサギ属（クマツヅラ科）の１新種

伊豆諸島にクサギ属植物として二種が生育することが判明した．一つはクサギで，もう一つは葉の表面が無毛の点は南日本のアマクサギと共通だが，雄しべの花冠から突き出る長さが短い点，花の筒部がほとんど白色である点，萼片が幅が狭く，緑色である点，花冠がやや反り返る点などで区別できる．両者は利島や新島などでは同所的に存在するが，中間的な個体は見られない．従って，伊豆諸島のアマクサギ類似の植物はアマクサギとも異なる新種と考えられるので，*Clerodendrum*

izuinsulare（シマクサギ）として発表した．シマクサギは1)雄しべは花筒より5－15mm突き出る，2)葉や花序はほぼ無毛，3)花筒部は白色から淡紅色，4)萼裂片は披針形から狭卵形で幅2.5－4.5mm，5)萼片はほとんど赤くならず緑色，5)花冠裂片はやや後ろに反り返る，6)花の直径が15－20mmとやや小さい，7)開花時期がやや遅く，8月から10月まで開花するという特徴がある．

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